Orange County Sanitation District

Source Control Division



Pre-Permit Inspection Report (PPIR)

Permit Number: 11-1-089

Company Name: CAL-AURUM INDUSTRIES INC.

Sewer Address: 15632 CONTAINER LANE

HUNTINGTON BEACH 92649

Prepared by:

Tran, Jane H.

Date Inspected: 03/12/13

PAUL A. GINDER Contact:

PRESIDENT

Description of Facility Operations

CAL-AURUM INDUSTRIES INC. (Cal-Aurum) performs surface finishing on aluminum, copper, mild and stainless steels, and kovar (nickel/iron alloy) parts. The facility is a large job shop exclusively dedicated to processing customer-supplied parts. Cal-Aurum specializes in precious metals plating, providing services for aerospace, communications, electronics, and military applications. The wet processing proceeds by rack, barrel, and continuous reel-to-reel techniques. The effluent discharge at Cal-Aurum is composed of the various spent process solutions and associated rinse wastestreams generated during the cleaning, coating. common and precious metals electroplating, electroless plating, etching, finish stripping, and rinsing of parts. The operations are housed in one building.

Operation(s) that do not generate wastewater include masking, and hole plugging.

Waste/Wastewater generating operation(s) include 60/40 tin/lead plate, 90/10 tin/lead plate, acid activator, acid cleaner, acid cleaning, acid dip, acid etch, acid predip, Actane activator, albaloy plate, alcohol cleaner, alkaline cleaner, anti-tarnish dip, bright dip, bright nickel plate, bright silver plate, bright tin, bright tin plate, bright tin/lead plate, brite dip, cascade rine, cascade rinse, cobalt/gold plate, copper drag-out, copper plate, copper strike, Cu strike, D.I. rinse, deox clean, deox cleaner, DI drag-out, DI rinse, dishwasher, drag-out, dragout rinse, dull tin/lead plate, EDTA rinse, electrocleaner, electroless nickel plate, empty, gold drag-out, gold plate, gold plate (E94 Ni), gold strike, gold strip, gold strip drag-out, H2SO4 acid dip, H2SO4 predip, HCL acid dip, HCL dip, hot D.I. rinse, hot DI, hydrochloric acid, Ni strike, nickel activator, nickel drag-out, nickel plate, nickel strike, nitric acid, nitric acid dip, not in use, palladium Ni, rhodium plate, running rinse, save this space, silver drag, silver plate, silver plate (mate), silver strike, soak cleaner, soap cleaner, solder strip, spray rinse, sulfuric acid, tin plate, ultrasonic cleaner, water shedder, Watts Ni plating, watts nickel plate, and zincate.

Description of Waste/Wastewater Controls

Waste/Wastewater Controls Using Dragout Reduction



One of the most critical components for effective waste/wastewater control is minimizing dragouts. Reducing dragout will extend bath life, minimize and help stabilize the loading to the pretreatment system, and reduce chemical costs for replenishment and treatment.

Process baths at Cal-Aurum are heated which helps reduce dragouts. Because the viscosity and surface tension of the solution are typically lower when the temperature is raised, the heated solution drains off the parts more quickly, thereby reducing the amount of dragout. In addition, the evaporation makes room for replenishing from the static dragout tank. At Cal-Aurum, the alkaline cleaner, copper plate, gold plate, nickel plate, and rhodium plate process tanks are heated.

Cal-Aurum uses static dragout tanks as the initial rinse following certain process tanks. The use of static dragout tanks after the process baths helps to recapture process solution that adheres to the workpiece. The contents of the static dragout tanks are returned to the bath to compensate for evaporative losses, sent to the batch pretreatment system, or wastehauled. This reduces the amount of solution carried over into the subsequent rinse or process tanks which helps extend their useful life. At Cal-Aurum, the dragout rinses after the cyanide copper plate, copper strike, electroless nickel, and gold plate processes are returned to the bath.

Rinsing/airflow methods are not used at Cal-Aurum to aid in the removal of dragout solution from parts. The use of spray or fog rinses above heated process baths or a subsequent static rinse tank can help recover dragout on the workpiece.

Cal-Aurum uses spray rinses in combination with immersion rinsing. Because a spray rinse is used in place of the initial running rinse, most dragout on the workpiece is removed while generating less wastewater. The wastewater generated is concentrated, allowing the opportunity to recycle it into the process bath to compensate for evaporation.

Cal-Aurum does not use hoists and/or drip bars which allow the employees to hang workpieces so the process solution drains back into the process tanks. Because of this, there is a tendency for parts to be quickly transferred on to the next tank/rinse resulting in more solution dragout. Drip bars and/or hoists will reduce the strain on the employees as they move the workpieces between tanks. Reducing the strain or effort improves the chances that the employees will take the extra time to allow sufficient draining.

Cal-Aurum utilizes strategic positioning of each workpiece on the rack to reduce the dragout. Because dragout is trapped in grooves or cavities present in or on workpieces as they are withdrawn from solution, consideration is taken as to how the pieces are positioned for immersion. This facilitates drainage of the solution in a consolidated manner while minimizing the amount trapped or dropped on to other pieces.

Drain boards or contiguous tanks are used to eliminate the space between tanks. As parts are moved from tank to tank, solution drips off the parts. The drain board captures the drops and returns the solution to the appropriate bath, while preventing spillage to the floor. With contiguous tanks, the solution drains directly back into the tank.

Waste/Wastewater Controls Using Water Reduction - Rinse Controls



Water reduction through rinse controls is an effective method for waste/wastewater control. Common rinse controls include the use of flow restrictors, "on-demand" rinse flow, and closed loop rinse systems.

Shut-off valves are installed upstream of individual rinse stages enabling Cal-Aurum to conserve water and reduce the volume of water that needs to be treated. The valves limit the overall volume of rinse water used by allowing the individual rinse stations to be shut off when work is not being processed. This reduces the hydraulic demand and allows better control of the feed rates across the final neutralization system.

Cal-Aurum uses on-demand flow controls on most of their cascade and running rinses. Timers activate rinses only when parts are being processed, thus reducing the volume of contaminated rinse wastewater that needs to be treated. On-demand controllers were not currently installed on cascade rinse tanks 159, 207, 210, 214, or 222. The timer on cascade rinse tank 136 was out-of-order.

Waste/Wastewater Controls Waste Management of Spent Solutions



Spent solutions can be a major source of variability that affects compliance because of the heavy pollutant loadings that can potentially impact the performance of the treatment system. Many methods are available to efficiently control and treat spent solutions. These include bath maintenance, evaporation of the plating bath solution, reclamation of chemicals by the supplier, recovering of metals and metal salts, reusing baths as pH adjusters, treating the spent solutions with a dedicated batch system, off-site disposal, and metering the spent solutions into the continuous pretreatment system.

At Cal-Aurum they extend the life of such baths by removing contaminants using filtration & skimming of oils.

Cal-Aurum uses chemical products from chemical manufacturers that allow spent chemicals to be returned for recycling. Sending spent chemicals back to the manufacturer for recycling or reclamation, reduces the volume of spent chemicals treated onsite. At Cal-Aurum, the gold, palladium, rhodium and silver process baths are returned to the chemical supplier for reclamation.

Cal-Aurum recovers metals and metal salts from process baths using electrolytic recovery (electrowinning). Recovering metals and metal salts from a process bath not only reduces the pollutant loading on the pretreatment operations, but in some instances allows the reuse of the process solution, thereby reducing the amount of pollutants discharged to the sewer. At Cal-Aurum, copper contaminants are dummy-plated out of the nickel and tin plating baths to increase the life of these solutions.

Cal-Aurum generates spent acid or alkaline solutions that are typically discarded when contaminants exceed an acceptable level. Cal-Aurum uses some of their spent solutions for pH adjustment in the batch treatment process, taking advantage of the opportunity to minimize chemical costs and reduce waste generation.

Concentrated spent solutions and dragout rinses are either treated using a separate batch treatment system, or wastehauled offsite. This reduces the pollutant loadings from spent solutions, thus reducing the concentration of contaminants discharged to the sewer. Off-site disposal eliminates the need to treat and sewer the material.

Waste/Wastewater Controls Using Segregation



Segregation of wastestreams prior to comingling with other wastestreams can improve the efficiency of the preatreatment system and will result in lower treatment cost. Wastestreams requiring pollutant-specific treatment should be kept separate to ensure that only those wastewater requiring specific treatment are treated, and not all of the wastes, which could increase the chemical usage and sludge volume.

Cal-Aurum does not completely segregate its wastestreams. Although all of the concentrated spent solutions and dragout rinses are either batch pretreated or wastehauled, the dilute cyanide and complexed metal bearing running rinses are directed to the sewer after receiving pH neutralization only and some bleach addition. As a result, wastewater control is diminished, which can potentially cause variabilities in the effluent discharge.

Cyanide-bearing wastestreams must be segregated to destroy cyanides by oxidation before the metals are removed by precipitation. Wastestreams containing hexavalent chromium should also be segregated so they can be chemically treated to reduce the hexavalent chromium to trivalent chromium. Once chrome reduction has been achieved, the trivalent chromium is can treated with other metals by chemical precipitation. Because complexed metal wastes prevent metal precipitates from forming and settling out, they must also be segregated and treated individually to break up the metal complexes prior to precipitation. Acidic or alkaline wastestreams that do not contain metals can also be segregated and simply neutralized prior to discharge.

Wastestreams with low contaminant concentrations, typically from rinsing operations, are separated from the highly concentrated solutions generated during the peroidic dumping of spent process solutions. By segregating wastestreams based on strength, Cal-Aurum reduces variabilities resulting from wide fluctuations in the concentration level of raw wastestreams. Wastewater control is marginally achieved by

providing separate batch treatment, or wastehauling, for spent concentrated solutions, which would otherwise overwhelm the effluent discharge. The dilute cyanide, chrome, and complexed metal (electroless nickel) bearing running rinses are directed to the sewer without receiving pretreatment to destroy cyanide, reduce chrome, break complexes, or remove metals.

Waste/Wastewater Controls Using Pretreatment System



Adequate design and reliable operation of a pretreatment system is critical for maintaining compliance. Within the pretreatment system, good controls will eliminate variabilities affecting the performance of the pretreatment system.

Cal-Aurum has contaminated wastestreams that require pretreatment prior to discharge to the sewer. Therefore, the use of a pretreatment system is necessary to provide good wastewater control to meet consistent compliance. Cal-Aurum has operations that generate categorical wastestreams. Cal-Aurum utilizes a batch pretreatment system for treating spent solutions. The contaminated rinses received only pH adjustment and bleach addition (not 2-stage CN destruction) prior to discharge to the sewer. This practice may not guarantee consisten and long-term compliance.

Flow equalization is used to dampen the influent wastewater flowrate and concentration so that a constant or nearly constant flowrate and concentration are achieved. Flow equalization is used to overcome the operational problems caused by flowrate variations, improve the performance of the downstream processes, and reduce the size and cost of downstream treatment units. At Cal-Aurum, individual equalization tanks are utilized for each of the segregated wastestreams prior to treatment.

Cal-Aurum uses a filter press for dewatering the sludge from the batch treatment. The filtrate generated typically contains heavy metals that pass through the filter cloth. At Cal-Aurum, the filtrate is not discharged directly to the sewer but is pumped to a final polishing filter and holding tank and tested for compliance prior to discharge.

The use of proper instrumentation and control to measure and achieve desired operational parameters, coupled with regular calibration and maintenance are essential for reliable operation. At Cal-Aurum, pH adjustment is manually conducted with a hand-held pH meter at the batch treatment system. This practice may cause consistency problem due to human errors.

Wastewater treatment operators play a key role in the operation of the pretreatment system. At Cal-Aurum, pretreatment operators are provided during all shifts of discharge. All treatment operators have formal training/certification in wastewater treatment. Training/Certification include CWEA Certification. Having trained operators help ensure proper operation and maintenance of the pretreatment system. At Cal-Aurum, an Operations and Maintenance (O/M) Manual is available to guide the operators. The O/M Manual is available in English.

Waste/Wastewater Controls Through Environmental Management Practices



Management commitment to achieve environmental compliance is a principal component for effective waste/wastewater control.

One way the management can demonstrate its commitment to environmental or regulatory compliance is through a written company policy. At Cal-Aurum, a written policy or mission statement forms the basis for the company's routine business practices pertaining to compliance.

Cal-Aurum conducts additional self-monitoring beyond the minimum required frequency. Additional sampling and analysis of the wastewater discharge helps to ensure that noncompliance problems are identified and resolved quickly. Monitoring ranges from instant grab samples to 24-hour composites. Samples for effluent monitoring are analyzed on-site, which provides immediate feedback about the compliance status of the discharge, prompting immediate adjustments and corrective actions to achieve compliance.

Cal-Aurum maintains records of its pretreatment system status, equipment maintenance (PTS and/or Process), chemical supply (PTS), and sampling and analysis results. Maintaining logs and records is important for a company to understand its maintenance needs, chemical use, and operating parameters. The records provide an in-depth understanding of daily operations, supply useful information for improving pretreatment system performance and/or diagnosing problems that arise, and ensure that needed maintenance is not overlooked.

Cal-Aurum has a company policy empowering the treatment operators, or other personnel, to shut down the wet processes when a pretreatment upset occurs. This authorization allows the treatment operators to correct the problem and restore the system to proper operating conditions, thereby preventing any further noncompliant discharge.

The permittee has an updated slug control plan or equivalent on site.

Slug Control Plan Notification procedure and information is posted at permittee location.

Recommendations for Improvement

Waste/Wastewater Controls Using Dragout Reduction

- Use spray or fog rinse systems above heated baths to recover dragout on the workpiece. Purified water should be used for these systems in order to reduce bath contamination from the rinse water. The spray rinse flow rate should be adjusted to be equal to the evaporation rate of the tank so it can be used to replenish evaporation losses. As the workpiece rack is raised above the process tank, air can be blown at the workpieces to improve the drainage of the dragout solution into the process bath. High humidity air can be used in order to counteract workpiece drying.
- Use drip bars and/or hoists to hang workpieces, thus eliminating the need for operators to manually lift and hold workpieces to drain process solution back into the process tanks. Such devices reduce the strain on the operators as they move workpieces between tanks.
- Implement measures that allow the workpiece to be slowly removed from the process bath. The faster a workpiece is removed from the process bath, the thicker the film on the workpiece surface and thus, the greater the dragout volume. The effect is so significant that most of the time allowed for rack drainage should instead be dedicated to withdrawal from the tank. Remember to allow sufficient time to drain process solution back into the process tank before moving the part to the next tank.

Waste/Wastewater Controls Using Segregation

Segregate wastestreams by type for more effective treatment of wastewater. Segregating waste streams is essential for most recycling, recovery, and treatment technologies, since other waste, if mixed, can disrupt the process. The chemical properties of a wastestream must be understood in order to assess the potential for reuse, recycling, recovery, and treatment. Examples of segregated wastestreams by type: acidic vs. alkaline; chrome vs. non-chrome; chelated vs. non-chelated streams; cyanide vs. non-cyanide.

Waste/Wastewater Controls Using Pretreatment System

Install adequate instrumentation and automatic process control system for reliable operation of the pretreatment system.

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	Tank Name	cascade rinse	copper strike	copper strike	dragout rinse	cascade rinse	copper strike	nickel activator	nickel activator	nickel strike	electroless nickel plate	electroless nickel plate	electroless nickel plate	electroless nickel plate	soak cleaner	ultrasonic cleaner	empty	empty	DI rinse	solder strip	solder strip	nitric acid	nitric acid	cascade rinse	acid cleaner	sulfuric acid	sulfuric acid	cascade rinse	bright dip	drag-out	bright dip	bright dip	electroless nickel plate
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	Tank Name	\vdash	M3 dragout rinse	M4 cascade rinse	M5 cobalt/gold plate	M6 cobalt/gold plate	M7 gold plate	M8 drag-out	M9 cascade rinse	M10 hot DI	M11 nickel strike	M12 cascade rinse	M13 gold strike	M14 H2SO4 predip	M15 rhodium plate	M16 nickel activator	M16.5 anti-tarnish dip	M17 gold drag-out	M18 gold plate	M19 gold strike	M20 cascade rine	M21 copper drag-out	M22 copper strike	M24 cascade rinse	M25 HCL acid dip	M26 cascade rinse	M27 electrocleaner	M28 electrocleaner	M29 brite dip	M30 cascade rinse	M31 H2SO4 acid dip	Bd1 gold plate	Bd2 gold drag-out
	£#	,	127 N	128 N	129 N	130 N	131 N	132 N	133 N	134 N	135 N	136 N	137 N	138 N	139 N	140 N	141 N	142 N	143 N	144 N	145 N	146 N	147 N	148 N	149 N	150 N	151 N	152 N	153 N	154 N	155 N	_	157 B

Permit No. 11-1-089

CAL-AURUM INDUSTRIES INC.

PPIReInspected 03/12/13

1 1 2 2 2 2 2 2 2 2	Ì						Pollut	utants	v			_	Rinse	e Str	Rinse Strategy	_						9 Pr	dno	Group Destination	inati	u o				
Bdd gold plate 2 6 Bdd cascade rines 7 7 Bd gold plate 7 7 Bd0 gold plate 7 7 Bd1-1 descroot-dearer 7 7 L1-1 descroot-dearer 7 7 L1-2 HCL seld dip 7 7 L1-3 nickel sativac 7 7 L1-3 spray rinse 7 7 L1-3 spray rinse 7 7 L1-3 spold strike 7 7 L1-1 spold drag-out 7 7 L1-1 spold drag-out 7 7 L2-2 copper strike 7 7 L2-3 copper strike 7 7 L2-4 nickel strike 7 7 L2-5 sold drag-out 7 7 L2-5 sold strike 7 7 L2-1 decorded rinse 7 </th <th># Ctrl</th> <th>Tank ID</th> <th>· · · · · · · · · · · · · · · · · · ·</th> <th>Process</th> <th>muimondO inelexexeH</th> <th>Cyanide</th> <th></th> <th>- 121</th> <th></th> <th></th> <th>Running</th> <th>Counter Current</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>CTS - HM Precipitation</th> <th>Batch Treatment</th> <th>Wastehauled Offsite</th> <th>Pischarged to SP</th> <th>Replenish</th> <th>Return to Process Tank</th> <th>ylnO tauįbA Hq</th> <th>mətay2.X.I</th> <th>Electrowinning</th> <th>Other</th>	# Ctrl	Tank ID	· · · · · · · · · · · · · · · · · · ·	Process	muimondO inelexexeH	Cyanide		- 121			Running	Counter Current									CTS - HM Precipitation	Batch Treatment	Wastehauled Offsite	Pischarged to SP	Replenish	Return to Process Tank	ylnO tauįbA Hq	mətay2.X.I	Electrowinning	Other
Bd4 cascade rines 2 6 7 7 8 8 84 <	158	Bd3	\vdash	>		>	>							-		,	102		33	131			>							
Bd5 hot D1. rinse 6 Bd10 sould plate 6 Bd10 sould plate 6 L1-1 electrocleaner 6 L1-3 nickel strike 6 L1-3 nickel strike 6 L1-4 strickel plate 7 L1-8 spray rinse 7 L1-7 spold strike 7 L1-8 spold strike 7 L1-9 gold drag-out 7 L2-1 electrocleaner 7 L2-2 epoch strike 7 L2-3 chock plate 7 L2-3 chock drag-out 7 L2-4 nickel strike 7 L2-5 rickel strike 7 L2-6 nickel strike 7 L2-7 sold drag-out 7 L2-9 sold blate 7 L2-9 sold blate 7 L2-9 sold drag-out 7 EDD1 scascade rins	159	Bd4	cascade rinse			>	>					2				-	2,19										>			
B49 gold plate / / / L1-1 electrocleaner / / / L1-1 electrocleaner / / / L1-2 HCL acid dip / / / L1-3 nickel strike / / / / L1-4 spray rinse / / / / / / L1-5 spold strike / <td>160</td> <td>Bd5</td> <td>hot D.I. rinse</td> <td></td> <td></td> <td></td> <td>></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>F</td> <td>></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>></td> <td></td> <td></td> <td></td> <td>7</td> <td></td> <td></td> <td></td>	160	Bd5	hot D.I. rinse				>					-	F	>		-							>				7			
Bd10 sosp cleaner / / L1-1 Heletrocleaner / / L1-3 Hickel activator / / L1-4 nickel strike / / L1-4 sinckel plate / / L1-7 spray rinse / / L1-7 gold strike / / L1-7 gold drag-out / / L1-9 gold drag-out / / L2-1 Helectrocleaner / / L2-1 Hickel strike / / L2-1 mickel strike / / L2-2 mickel strike / / L2-3 copper strike / / L2-3 gold place / / L2-3 gold drag-out / / L2-4 mickel strike / / L2-5 gold drag-out / / L2-7 / / <td>191</td> <td>Bd9</td> <td>gold plate</td> <td>></td> <td></td> <td>></td> <td>></td> <td>95 ·</td> <td>1/2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	191	Bd9	gold plate	>		>	>	95 ·	1/2							>							>							
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11-2 HCL acid dip	33	L1-1	electrocleaner	>			>									,			14			>								
11-3 nickel activator	4	L1-2	HCL acid dip	>			>									,	15	1-9 8-3			1000	>								
11-4 nickel strike	55	L1-3	nickel activator	>			>	9.0								>	1/8				Post Inc.	>								24
11-4R spray rinse	9	L1-4	nickel strike	>			>									,			9			>								
L1-5 sinkel plate /	7	L1-4R	spray rinse				>						>														>			
L1-5R spray rinse /	œ.	L1-5	nickel plate	>			>									•					1	>								
L1-7 gold strike /	6	L1-5R	spray rinse				>						>														>			
L1-8 gold drag-out C	0	L1-7	gold strike	>		>	>									>	I IAV				16		/							
L1-9 gold plate * <	_	L1-8	gold drag-out			>	1		Y.A Jan					_		_										>				
L1-10 gold drag-out / / / / / / / / / / / / / / / / / / /	2	L1-9	gold plate	>		>	>	1.45 1.45								>	838						1							
L2-1 electrocleaner /	3	L1-10	gold drag-out			>	>							>								0.7				>				
L2-2 HCL dip * * * * * L2-3 copper strike *	4	L2-1	electrocleaner	>	7	7	>									>	8 8					>								
1.2-3 copper strike	5	L2-2	HCL dip	>			>					1				>			tel.			>							180	
L2-4 nickel strike /	9	L2-3	copper strike	>			>		16/2 2008							>					100	>								
L2-5 nickel plate *	7	L2-4	nickel strike	>			>							_		*				17		>								
L2-6 nickel drag-out V	∞	L2-5	nickel plate	>	THE REAL PROPERTY.		>			100						>						>							d	
L2-9 gold drag-out '	6.	L2-6	nickel drag-out	>			>	881. V V						>						471		>								
L2-10 gold drag-out '	0	L2-9	gold plate	>		>	>									•			13.				>							
EDD1 ultrasonic cleaner '	1.5	L2-10	gold drag-out			>	>		377					>			Ne									>				
EDD2 cascade rinse '	2	EDD1	ultrasonic cleaner	>			>						-			^		1				>								
EDD3 deox cleaner /	33	EDD2	cascade rinse				>					2			*		190			10.5 10.6							>			15.19
EDD4 alkaline cleaner	4	EDD3	deox cleaner	>			>			X						*						>								
EDD5 hot D.I. rinse EDD6 cascade rinse EDD7 brite dip	35	EDD4	alkaline cleaner	>			>							_	_	*		W.				>								
EDD6 cascade rinse EDD7 brite dip	9	EDD5	hot D.I. rinse				>				>			-	>		(27)		100								>			
EDD7 brite dip	7.	EDD6	cascade rinse	E/C			>					2			>		10								7		>			
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Group Destination	Wastehauled Offsite			100			>	>	>		300					>							>				
Grot	Batch Treatment	>			3.5			988			>	>	>					>			>						
_	CTS - HM Precipitation														191												Jan.
	CTS- Cyanide Destruction						100	9.0				235															
	CTS- Chrome Reduction	30	88		300		100														150	4 X S				3	10
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٩	General Heavy Metals	>	>		>	>	>		>		>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>
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	Tank Name	bright dip	cascade rinse	dishwasher	cascade rinse	cascade rinse	lcoh	lcoh	lcoh	ave 1	acid cleaning	acid cleaning	not in use	cascade rinse	Cu strike	dragout rinse	cascade rinse	EDTA rinse	copper plate	cascade rinse	acid cleaner	Ni strike	dragout rinse	cascade rinse	Vatt	cascade rinse	hot D I ringe
		-	Ü	P		3	B	a	G							Р	-	H						3		3	H
	Tank ID	EDD7B	80	8	EDD10	011	012	013	014	EDD15	EDD16	EDD17	EDD18	EDD19	EDD20	D21	EDD22	EDD23	EDD24	EDD25	EDD26	EDD27	EDD28	EDD29	EDD30	D31	FDD32
	-a	EDI	EDD8	EDD9	EDI	EDD11	EDD12	EDD13	EDD14	EDI	EDI	EDI	EDI	EDI	EDI	EDD21	EDI	EDI	EDI	EDI	EDI	EDI	EDI	EDI	EDI	EDD31	FD
	-	6			2	3	+	2	5	7	20		0		2		4	2	2	7	000	6			2		4
	# 5	189	190	161	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214

Waste Stream Destination Concern List

Pollutant	Tank ID	Tank Name	Group Destination	Comments
Cyanide	A5	cascade rinse	pH Adjust Only	Timer.

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General Heavy Metals	A5	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	A9	running rinse	pH Adjust Only	Timer.
General Heavy Metals	A10	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	A14	running rinse	pH Adjust Only	Timer.
General Heavy Metals	B8	cascade rinse	pH Adjust Only	timer
General Heavy Metals	C2.5	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	C5	cascade rinse	pH Adjust Only	Timer.
Cyanide	60	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	60	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	C14	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	D2	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	D13	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	F6	cascade rinse	pH Adjust Only	Timer.
Cyanide	F11	spray rinse	pH Adjust Only	
General Heavy Metals	F11	spray rinse	pH Adjust Only	
General Heavy Metals	F16.5	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	63	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	G5	cascade rinse	pH Adjust Only	Timer.
Cyanide	69	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	69	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	AR6	cascade rinse	pH Adjust Only	Timer.
General Heavy Metals	AR15	cascade rinse	pH Adjust Only	timer
General Heavy Metals	M4	cascade rinse	pH Adjust Only	
Cyanide	6W	cascade rinse	pH Adjust Only	
General Heavy Metals	6W	cascade rinse	pH Adjust Only	
General Heavy Metals	M12	cascade rinse	pH Adjust Only	timer
Cyanide	M20	cascade rine	pH Adjust Only	
General Heavy Metals	M20	cascade rine	pH Adjust Only	
General Heavy Metals	M24	cascade rinse	pH Adjust Only	timer
General Heavy Metals	M26	cascade rinse	pH Adjust Only	timer
General Heavy Metals	M30	cascade rinse	pH Adjust Only	timer
Cyanide	Bd4	cascade rinse	pH Adjust Only	timer
General Heavy Metals	Bd4	cascade rinse	pH Adjust Only	timer
General Heavy Metals	L1-4R	spray rinse	pH Adjust Only	
General Heavy Metals	L1-5R	spray rinse	pH Adjust Only	
General Heavy Metals	EDD2	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD5	hot D.I. rinse	pH Adjust Only	timer
General Heavy Metals	EDD6	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD8	cascade rinse	pH Adjust Only	timer
Other	EDD9	dishwasher	pH Adjust Only	labware use
General Heavy Metals	EDD10	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD11	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD19	cascade rinse	pH Adjust Only	timer
Cyanide	EDD22	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD22	cascade rinse	pH Adjust Only	timer
Cyanide	EDD25	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD25	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD29	cascade rinse	pH Adjust Only	timer

General Heavy Metals	EDD31	cascade rinse	pH Adjust Only	timer
General Heavy Metals	EDD32	hot D.I. rinse	pH Adjust Only	timer

Pretreatment Unit Processes

The following pretreatment unit processes are in place at this facility:

Continuous	Batch	
□ Continuous Chromium Reduction □ Contin.Cyanide Destruct 1Stage □ Contin.Cyanide Destruct 2Stage □ Equalization tank □ Contin. Chemical Precipitation □ Effluent pH Adjustment □ Continuous Coag/Floc □ pH Adjust Tank-No Heavy Metals □ Clarification neop □ Sludge Thickening Tank □ Clarification eop □ Continuous O/W Sep □ Polishing Filter □ Plate & Frame Filter Press □ Other Pressure Filtration Device □ Ion Exchange □ Anion Exchange □ Cation Exchange □ Cation Exchange □ Mixed-Bed Ion Exchange □ Cross Flow Filter (Memtek) □ Sorption Filter (Lancy) □ Aluminum Chip □ Holding Tank	Multi-Purpose Batch Tank 1 Multi-Purpose Batch Tank 2 Multi-Purpose Batch Tank 3 Batch Chrome Reduction Batch Cyanide Destruct 1Stage Batch Cyanide Destruct 2Stage Batch Chemical Precipitation Batch Coagulation/Flocculation Plate & Frame Filter Press Batch Chelate Breaking Tank Batch Clarification Sludge Thickening Tank Polishing Filter Batch O/W Sep Electrowinning/Plateout Effluent pH Adjustment Anion Exchange Cation Exchange Mixed-Bed Ion Exchnage Carbon Filtration Holding Tank	

The continuous pretreatment vessels include: Contin.Cyanide Destruct 1Stage; Effluent pH Adjustment; Clarification eop. The batch pretreatment vessels include: Multi-Purpose Batch Tank 1; Multi-Purpose Batch Tank 2; Plate & Frame Filter Press; Polishing Filter; Electrowinning/Plateout; Holding Tank.

